



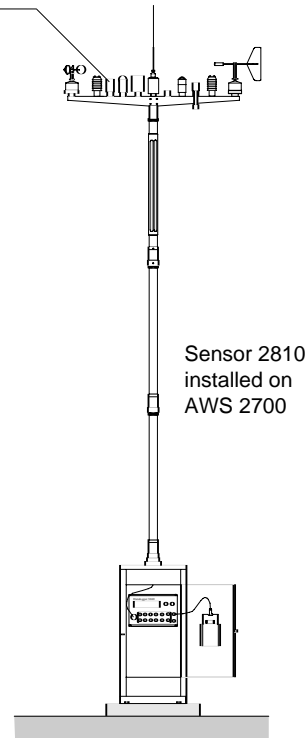
AANDERAA INSTRUMENTS

DATA COLLECTING INSTRUMENTS FOR LAND SEA AND AIR



AIR PRESSURE SENSOR 2810

A barometric pressure sensor for Aanderaa Automatic Weather Stations and Display Units.



The monolithic technology used in modern electronic devices may also be used for making small pressure sensors. Sensors made using this method have very small hysteresis and a very low rate of ageing.

To eliminate error due to ambient temperature changes the small sensing element can be heated to a specific temperature before the measurement is taken.

Air Pressure Sensor 2810 utilizes a 4x4mm small silicon chip as a sensing element. In the central area of this chip is a thin membrane that is exposed to atmospheric pressure on one side and to a vacuum on the other. The membrane is furnished with 4 diffused resistors that form a Wheatstone bridge. The output signal is proportional to the atmospheric pressure. The chip thus acts as an absolute pressure-sensing device.

A temperature sensing resistor and 4 heating resistors are also diffused onto the chip. In conjunction with an external control circuit, these resistors allow the chip to be held at a constant temperature of 47°C during the measurement.

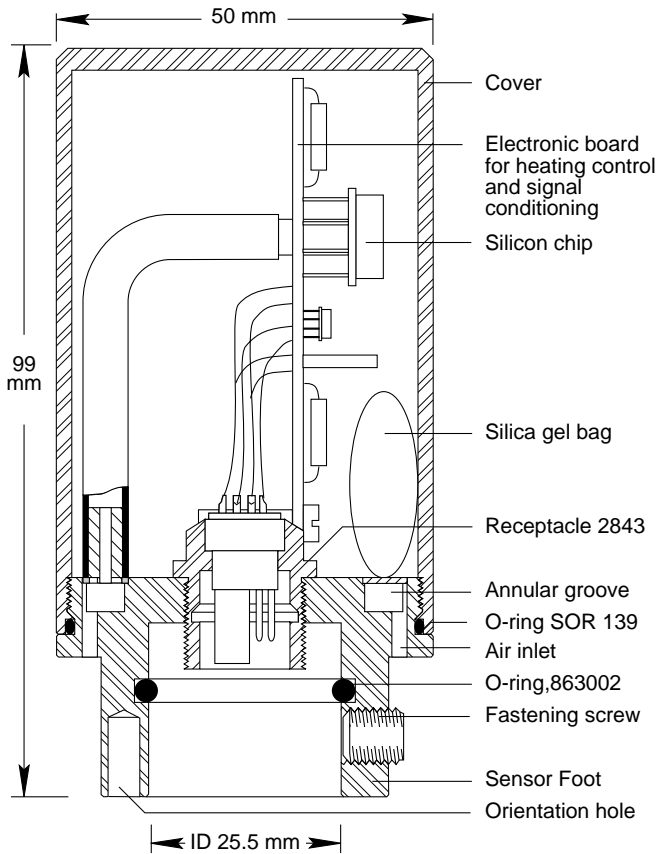
The sensor consists of a PC-board with components fastened to the sensor base and protected by a cylindrical cover. The cover is screwed onto the base and sealed with an O-ring. Six holes in the base provide atmospheric pressure to the sensing element inside the sensor.

The sensor shows outstanding performance as it has practically no hysteresis, no temperature drift and no ageing. It is also insensitive to mechanical acceleration and can be operated in any position. The sensor is waterproof.

Before measurement the sensor is heated to 47°C and to allow enough time for temperature stabilization the sensor should be connected to one of the last channels in the measuring system.

Current consumption for silicon chip heating varies with ambient temperature. At 47°C the heating current is zero. This increases linearly as temperature decreases. A maximum of 70 mA for heating is reached at -40°C. The heating current is normally switched off between readings.

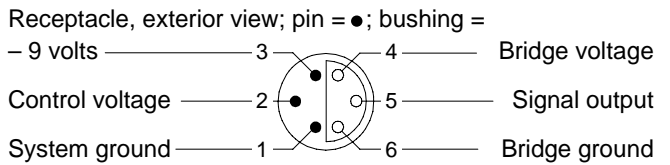
SPECIFICATIONS FOR AIR PRESSURE SENSOR 2810



- Measuring Range:** 920–1080 hPa (other ranges on request)
..... hPa
- Accuracy:** ±0.2 hPa
- Resolution:** 0.2 hPa
- Operation Temp. Range:** –40 to +47°C
- Sensor Output:** Aanderaa half-bridge, VR22
- Supply Voltage:** 7–14V DC (9 volt nominal)
- Current Consumption:** 5 mA + heating: (47 – T) 0.75 mA
T = ambient temperature in °C
- Electrical Connection:** Automatic Weather Station (AWS)
Sensor Arm or Sensor Cable 2842
- Material and Finish:** Aluminum 6061-T6, anodized 10µ
- Weight:** 200 grams
- Packing:** Cardboard box
- Gross Weight:** 400 grams
- Warranty:** Two years against faulty materials and workmanship

CE certified

PIN CONFIGURATION



CALIBRATION

Serial No: _____

Calibration is performed at room temperature. Reference: Dr. A Müller, Berlin Hg Barometer Type Ili. Datalogger 3660, giving the following raw data readings:

Pressure hPa	Raw data	Pressure hPa	Raw data

These readings give a set of coefficients used when converting a sensor reading to engineering units. The coefficients are:

A		C	0
B		D	0

To convert raw data reading to engineering units use the formula:

$$\text{Pressure (hPa)} = A + BN + CN^2 + DN^3$$

Date: Sign:

Note!

The sensor is RF sensitive.
(Frequency range ≤ 500MHz, field strength ≥ 3V/m)

The standard range can be used up to an installation altitude of approximately 400 meters. For higher altitudes the range must be set by the factory prior to delivery. To refer the measured air pressure to sea level add a factor according to the table below (approx.value):

Installation altitude (m)	Add 1hPa each	Installation altitude (m)	Add 1hPa each
0 - 200	8 m	801 - 1000	9 m
201 - 400	8.5 m	1001 - 2000	9.6 m
401 - 600	8.7 m	2001 - 3000	10.7 m
601 - 800	8.9 m	3001 - 5000	12.4 m

Representative's Stamp

Latest version is on the Internet

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